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Evolving Structural Change and Business Strategies in the U.S. Electricity Industry

by John L. Jurewitz[1]

1.0 Introduction

The electric power industry is a major component of the United States economy. It accounts for over $210 billion in annual sales, $40 billion in annual investment, and 35 percent of primary energy use. For the past ninety years, this industry has been treated as a "natural monopoly." Vertically integrated utilities have operated within designated local geographic retail franchises, subject to pervasive regulation of prices, service quality, investment, and entry by competitive rivals. These local monopolies typically owned or contractually controlled sufficient generation to serve the full needs of their franchised retail customers. Likewise, their customers had little choice but to purchase their full electricity requirements from their local monopoly utility.

This monolithic vertically integrated structure began to unravel in 1978 with the passage of the Public Utility Regulatory Policies Act (PURPA). PURPA created a special class of wholesale generators known on Qualifying Facilities (QFs) and required utilities to purchase at regulated prices all the power these QFs produced. This overcame the monopsony power of utilities to simply refuse to purchase QF power, but the ensuing experience with state-regulated pricing was largely an economic failure. Disillusionment with this regulated pricing regime quickly led many state regulatory commissions to adopt competitive auctions for soliciting new generation capacity. But these centralized procurement processes were also flawed. The local utility was still the sole procurement agent acting on behalf of its retail franchised customers so that individual customers still had no ability to choose their suppliers. Moreover, supply-side business interests rapidly became adept at influencing the key decision of how much new generation should be solicited through these competitive auctions. By the early 1990s, the political-economy of the electricity industry was becoming increasingly intolerable in several states, contributing to retail electricity prices 50% above the national average.

On April 20, 1994, California broke from this traditional industry structure and became the first state to adopt "direct access" – the ability of end-use customers to "shop" the electricity grid and choose their own retail suppliers. Other states quickly followed California's lead, especially the high-cost states in the U.S. Northeast. By June 1999, 23 of the 50 states in the U.S. had adopted policies to phase-in direct access over relatively brief transition periods. Thus, the U.S. joined the international trend toward liberalization of retail electricity markets.

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The purpose of this chapter is to explore the ways in which U.S. companies are responding strategically to these regulatory initiatives and radically reshaping the U.S. and international electric power industries. It is important to keep in mind that business strategies manifest themselves in two basic ways. First, economic interest groups pursue rent-seeking strategies to shape the regulatory "rules of the game" to their own favor. Second, within the framework of these established rules, businessmen realign their asset portfolios and devise new value-added service strategies to maximize value for their shareholders. For the most part, this chapter will focus on the second of these two categories of corporate strategy.

2.0 The Organization and Regulation of the U.S. Power Industry

To understand corporate strategies in the U.S. power industry, it is first necessary to understand certain basic features of its industrial structure as well as the federal and state institutions that regulate it. To begin with, the industry is huge. It is composed of more than 3,000 utilities with about 800,000 megawatts of generating capacity, delivering more than 3 trillion kilowatt-hours, and generating revenues over $200 billion annually.[2] More than 75 percent of retail electricity sales are made by investor-owned utilities (IOUs). These institutions are the main focus of the restructuring reforms taking place in the U.S. and are the primary subject of the discussion here. But it is important to recognize that the ownership structure of the electric power industry is among the most peculiar of any American industry. In addition to the almost 200 IOUs and numerous investor-owned independent generators, wholesale brokers, marketers and retailers, there are also numerous important publicly owned power entities. These include about 2,000 local municipal utilities, about 1,000 rural electric cooperatives, six federal power marketing authorities, and numerous public power districts and state-owned power projects. These public power entities are generally not regulated by either the state public utility commissions (PUCs) or the Federal Energy Regulatory Commission (FERC). Nonetheless, they are an important part of the competitive landscape and their separate regulatory and tax treatment is a source of nearly constant competitive anxiety to IOUs.

2.1 Historical Foundations of Regulation

Beginning in the first decade of this century, state PUCs began imposing economic regulation on IOUs. By 1916, 33 states had utility regulatory commissions. The scope of state regulation was very broad and generally governed retail prices, quality of service, obligation to provide service within designated geographic franchise areas, protection against entry of competitive suppliers, and approval of major new investments. During the 1920s, two significant developments took place. First, utilities began becoming more interconnected with one another, including interconnections across state boundaries. Second, holding company structures began to dominate major portions of the industry. Both of these trends created an industry structure which could not be satisfactorily regulated by individual state PUCs, largely because of the U.S. Constitutional prohibition against states regulating interstate commerce.

[2] See Leonard S. Hyman, America's Electric Utilities: Past, Present and Future, 6th edition, Public Utilities Reports, Inc., 1997.

These events led to the passage in 1935 of both the Federal Power Act (FPA) and the Public Utility Holding Company Act (PUHCA). Under the FPA, the federal government asserted jurisdiction over the "regulatory gap" that had developed between state PUCs due to their inability to regulate interstate commerce. The FPA conferred this task upon the Federal Power Commission (which in the mid 1970s was restructured as the Federal Energy Regulatory Commission). Under PUHCA, private companies are essentially prohibited from owning electric facilities in more than one state unless these facilities are directly interconnected.

To adequately understand the U.S. power industry it is essential to appreciate that federal regulation by the FERC does not have the same pervasive scope as regulation by the state PUCs. Instead, under the U.S. structure of regulatory federalism, state PUCs traditionally have exercised the primary regulatory control over utilities while the FERC simply plugged the gaps between states by regulating interstate electricity commerce (although this traditional model of state-federal jurisdiction seems to be rapidly eroding under the current industry restructuring). Specifically, the FERC regulates the pricing, terms and conditions of both power sales for resale (i.e., wholesale power sales) and transmission services in interstate commerce. Because, with the exception of Texas, the U.S. power industry operates as two huge synchronous grids – the Western Interconnection and the Eastern Interconnection – all wholesale power sales and transmission services offered by IOUs, except those in Texas, are regulated by the FERC. The FERC also has authority to approve power pooling arrangements and mergers. However, unlike state PUCs, the FERC does not establish exclusive geographic franchises, control entry of competitors, impose an obligation to serve, or license any electrical facilities (other than hydroelectric dams).

2.2 Emerging Competition

For the first 30 years following World War II, the dominant trend in the electricity industry was the growth and consolidation of most IOUs into vertically integrated enterprises, owning or controlling the generation resources needed to satisfy their retail customers' demands and becoming continually more interconnected with one another. This structure of regional vertically integrated monoliths all began to change with the passage of PURPA in 1978. Under PURPA, utilities were obligated to purchase power from QFs and pay them PUC-regulated prices equal to the purchasing utility's "avoided cost" – i.e., the cost the utility would otherwise have incurred in the absence of purchases from QFs. QFs were freed of any further economic regulation by state PUCs and given an exemption to PUHCA thereby allowing enterprises to own QFs in multiple states. Significantly, IOUs were allowed to own up to 50% of a QF. Some state PUCs were quite aggressive in establishing liberal pricing terms for QF power and strong QF industries developed in these states. The large number of QFs developed in these states clearly demonstrated the physical feasibility of maintaining reliability while integrating large numbers of independent generators into power systems. This also created a strong political-economic constituency for further structural change.

By the mid-1980s, some businesses became interested in developing stand-alone, merchant generation facilities that did not meet the narrow technical qualifications of a QF. But development of these facilities faced certain impediments. Among these impediments was the fact that these facilities would be subject to regulation by FERC under the FPA if they sold power to a local utility. Based in part on the demonstrated successes of QF development, the FERC wanted

to encourage the development of these stand-alone, merchant non-QF generators. Therefore, it launched its "market-based" regulation initiative. Rather than regulating prices based on traditional cost-of-service principles, the FERC began approving wholesale prices as "just and reasonable" under the FPA based upon a demonstration that they were negotiated at arms-length in a competitive environment in which the buyer had a reasonable number of alternative suppliers and the seller had no substantial market power, especially vertical market power due to control of transmission.

Despite the FERC's successful market-based price regulation initiative, there remained several barriers to the further development of merchant generation and more competitively structured wholesale power markets. First, provision of transmission service by a utility was entirely voluntary. This gave utilities a degree of monopsony power over independent generators as well as the potential to use their transmission strategically to favor their own generation. Second, non-QF independent generation developers still faced the PUHCA prohibition against owning non-interconnected generation facilities in multiple states.

In 1992, the federal government removed both of these competitive impediments by enacting the Energy Policy Act (EPAct). EPAct mandated that utilities provide wholesale (not retail) transmission access under FERC regulatory oversight. EPAct also created Exempt Wholesale Generators (EWGs) by exempting from the PUHCA prohibition against scattered multi-state facilities any stand-alone generator selling its power to a utility for resale. EWGs were specifically forbidden from selling their power to end-use retail customers. But EWGs were not exempted from FERC regulation under the FPA and the FERC must still determine that their prices are just and reasonable.

Instead of mandating any particular direction for industry reform, EPAct simply removed these two very significant impediments to wholesale competition. It is important to recognize that EPAct did nothing to directly mandate electric industry restructuring. Indeed, it strengthened existing barriers to the introduction of retail competition by expressly prohibiting the FERC from ordering transmission access for retail customers and prohibiting EWGs from selling their power directly to retail customers. Nonetheless, EPAct so substantially altered the discretion of utilities over wholesale transmission access and introduced such large new business opportunities for EWGs that it suddenly propelled the industry toward a new equilibrium.

Immediately following the passage of EPAct, the main FERC agenda was to use its newly expanded authority to further encourage wholesale competition. This meant establishing a simple ministerial process for certifying EWGs, implementing open wholesale transmission access rules, resolving the wholesale stranded cost issues created by open wholesale access, and continuing its market-based pricing initiative. By far the greatest new challenge was to implement the transmission access provisions of EPAct in such a way as to maximize wholesale competition by removing utility vertical market power over transmission. Ultimately, in orders 888 and 889, the FERC chose to accomplish this by ordering all utilities to internally separate their transmission service from their power marketing functions, implement strict codes of conduct for transmission service personnel, establish internet data bases with real-time posting of transmission availability and pricing, and file highly prescriptive pro-forma open-access transmission tariffs with FERC. Order 888 also established eleven principles for the formation of Independent System Operators (ISOs) but did not mandate their formation. Although Orders 888 and 889 have been very

successful in improving non-discriminatory transmission access, complaints still persist about alleged anticompetitive and discriminatory practices. This has led some parties to advocate mandatory participation of utilities in Regional Transmission Organizations (RTOs) such as ISOs. In April 1999, the FERC issued a Notice of Proposed Rulemaking to explore these issues with the intention of promulgating further rules.

2.3 The Retail Access Revolution

Following the passage of EPAct in 1992, the California PUC initiated a proceeding to decide what, if anything, the PUC should do in response to this federal legislation. It was not clear that any action was necessary, but California's electricity regulatory structure was in crisis. Electricity prices were 50% above the national average, the state was in a major recession, and businesses were leaving to locate in adjacent states. Most parties seemed to agree that California's central planning process for procuring new generation resources had become dysfunctional and too costly, but there was no consensus concerning a solution. Large customers wanted retail access, but utilities, small consumers, QFs, environmentalists, and labor unions were all opposed. Ultimately, free market philosophy and lack of an appealing alternative won the day. On April 20, 1994, the PUC issued its landmark decision[3] adopting direct retail access. Other states quickly followed, especially those in the Northeast which generally had comparably dismal histories of expensive and politicized resource procurement processes and high retail rates.

As shown in Figures 1 and 2, by June 1999, 23 of the 50 states had adopted retail access policies. Not surprisingly, these policy initiatives were concentrated in those states where previous institutions had seemingly failed to result in inexpensive power. 16 of the 23 states adopting retail access have average retail prices exceeding 6.5 /kWh and virtually every state in this price range has adopted retail access. On the other hand, only 7 of 31 states with prices below 6.5¢ have adopted retail access. Moreover, several of these states are quite vocal in their reluctance to adopt retail access, fearing it will raise electricity prices in their states. In view of this bipolar division among the states, it is questionable whether the federal government will act any time soon to mandate retail access nationwide. In fact, a coalition of 23 state PUCs was formed in late 1998 for the purpose of lobbying the U.S. Congress not to force a retail access mandate on the states, but instead to allow states to proceed on their own initiative. Thus, although it is certainly possible that federal legislation could be enacted to further clarify state-federal jurisdictional authorities, establish new reliability institutions, or further facilitate competition, it does not seem likely there will be a federal mandate ordering nationwide retail access in the near future. Without such a federal mandate, it seems doubtful that the number of states adopting retail access will increase very fast in the next few years pending more experience in those states that have.

[3] Proposed Policy Statement on Electric Industry Restructuring and Regulatory Reform, R. 94-04-031 and I. 94-04-032.

Figure 1

22 States Adopting Retail Access
(June 1999)

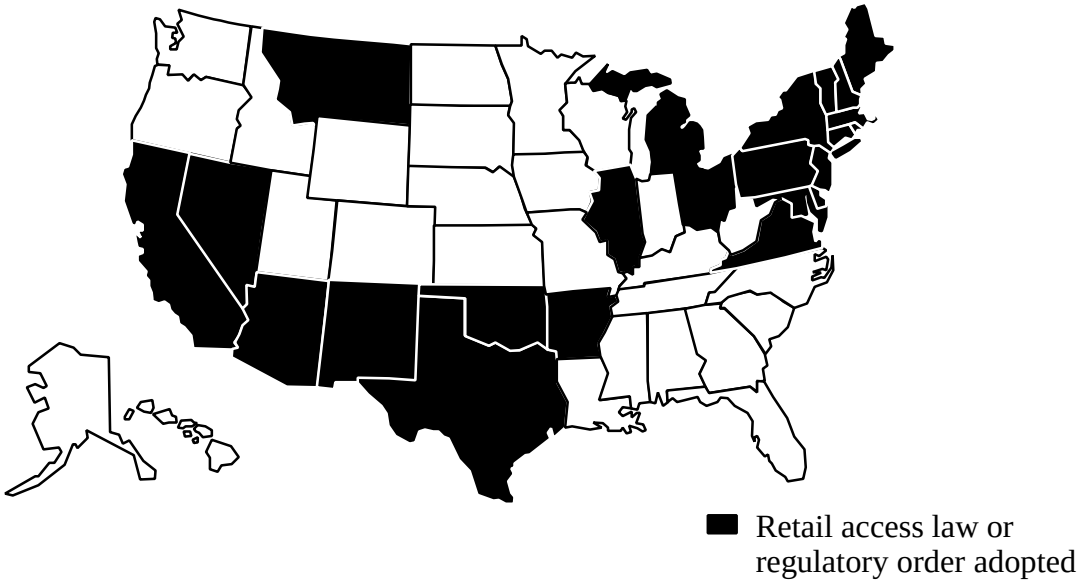
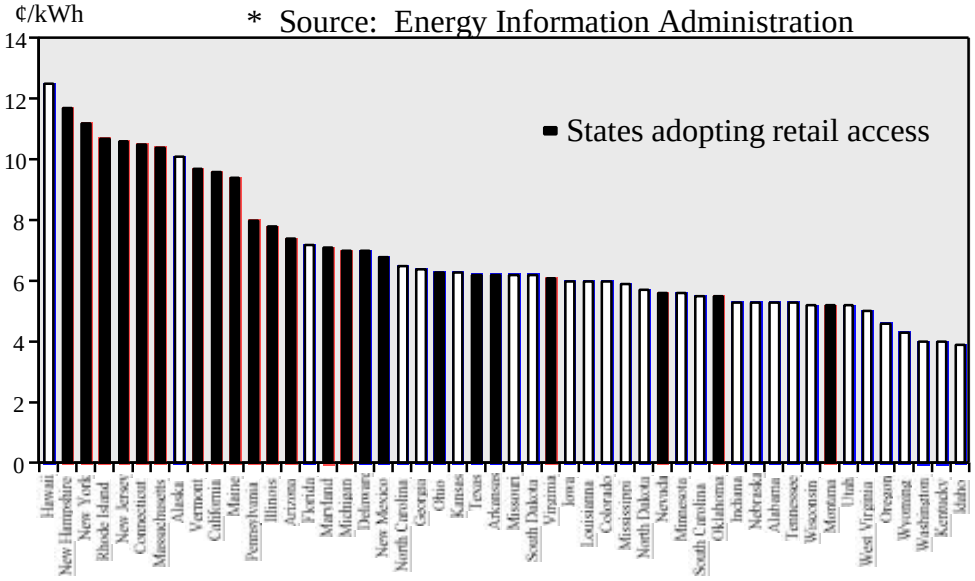


Figure 2
Average Revenues in States Adopting Retail Access
(1997)



This produces a mixed strategic picture for U.S. utilities. Several major national and international players such as Edison International, PG&E, GPU, CMS, and PSE&G will be operating from local bases in which retail access has already been adopted. Some large holding companies such as AEP and Entergy will be straddling states in both worlds. Still other companies – especially significant players based in the southeast such as Southern, Duke, and FPL – will be operating from local fortresses still structured as vertically integrated monopolies. These differences will undoubtedly affect corporate strategies.

2.4 The Impacts of Regulatory Changes on Corporate Strategy

Utilities and other enterprises develop business strategies to pursue promising business opportunities within the changing structure of utility regulation. Corporate strategies are heavily influenced by the regulatory rules of the game and, in some cases, it is essential to understand these rules in order to understand the strategic choices made. Within the U.S. structure of regulatory federalism, there is a single set of federal rules (not necessarily clear and unambiguous) but a patchwork of state rules and no clear nationwide consensus yet on retail access. Thus, utilities operating in states with retail access will generally pursue different corporate strategies from those in other states.

Regardless of whether a utility operates in a state with retail access, its strategies will be affected by changes in federal regulations. The following are the most important of these federal changes and their basic impacts on business strategies:

- **Open wholesale transmission access**: With the enactment of mandatory wholesale transmission access by EPAct, ownership of transmission has lost much of its strategic value. Implementation of EPAct through FERC Orders 888 and 889 and, more recently, the voluntary formation of ISOs and the prospect of possible mandatory participation in an RTO have gone even further to eliminate the strategic value of utility transmission ownership. At the same time, these initiatives have tremendously strengthened the structure of wholesale markets by broadening their geographic scope and increasing investor confidence by reducing the potential for discriminatory commercial abuses by transmission owners.

- **Creation of EWGs**: By creating EWGs, Congress enabled generation developers to own stand-alone, non-QF generation throughout the U.S. It also allowed these generators to freely buy and sell power at wholesale. Together these provisions have facilitated the development of large numbers of new merchant plants, encouraged the stunning growth of independent marketers, and enabled utilities to expand their ownership of non-QF generation into other states thereby reducing their resistance to divesting major portions of their traditional vertically integrated generation portfolios as part of comprehensive state-mandated retail access plans.

- **Market-Based Pricing**: Major credit for the progress toward competitive wholesale markets must be assigned to the market-based regulatory initiative launched by FERC in the late 1980s. Market-based price regulation was absolutely necessary in making wholesale marketing and merchant development of EWGs attractive enterprises. This initiative was enabled by the fact that the FPA fortunately does not prescribe the

application of cost-of-service regulation by FERC, but instead merely directs FERC to assure that wholesale prices are "just and reasonable." Without FERC's bold initiative instituting market-based pricing, none of the competitive wholesale market revolution of the last decade could have taken place except through Congressional legislation – a rather unlikely event.

Thus, even in the absence of individual state actions to adopt retail access, federal initiatives would be creating competitive wholesale electricity markets and having major influences on utility business strategies. In particular, the strategic value of owning transmission would still be substantially reduced, the geographic scope of wholesale markets would be substantially expanded, numerous wholesale marketers would be entering the market, entrepreneurs would be developing merchant non-QF generation, and utilities would likely be undertaking modest generation divestitures to reduce their local generation market shares sufficient to receive market-based wholesale pricing authority from FERC.

The adoption of retail access by many states has created regulatory structures that, for the most part, complement and extend the changes taking place in wholesale markets essentially by making these markets accessible to retail customers. Moreover, largely due to the structure of past institutions, the move toward retail access has resulted in the regulatory jurisdiction over large segments of the industry being massively shifted from state PUCs to the FERC without any deliberate intent to do so. This shift includes the pricing, terms and conditions associated with new owners of divested generation, services provided by ISOs including ancillary services and all transmission services, and even distribution services supplied to a direct access customer. Essentially, state PUCs are left with regulatory jurisdiction primarily over local distribution networks (even then, somewhat ambiguously), independent retailers (whom, in general, the PUCs are trying not to heavily regulate), and the terms under which the local distribution utility continues to offer retail services such as basic energy supply, metering and billing to end-use customers not choosing to purchase these services from competitive firms. The following are the most important elements of state retail access initiatives and their broad impacts on business strategies:

- **Stranded Cost Recovery**: At the beginning of retail access initiatives, credible independent research estimated the level of utility stranded costs at $100 to $200 billion nationwide. Moreover, as previously discussed, these stranded costs were concentrated in the states with the highest retail rates – those most inclined to adopt retail access. For most utilities in these states, every other dimension of corporate strategy paled in comparison to assuring recovery of stranded generation costs. Subsequently, most states adopting retail access have allowed utilities to recover almost all stranded costs in exchange for other political concessions. While the precise mechanisms for recovery of stranded costs vary considerably from state to state, most of these mechanisms create incentives for utilities to divest major portions of their traditional non-nuclear generation. To the extent that utilities are allowed to retain ownership of non-nuclear generation, they are encouraged or directed to place this generation in a separate "unregulated" subsidiary (FERC market-based regulation still applies).

- **Utility Role in Competitive Energy Retailing**: While rules vary by state, most states adopting retail access have required utilities to establish separate retailing subsidiaries if they wish to offer competitive retailing services (e.g., commodity energy hedging, etc.). Utilities themselves are restricted to offering only regulated tariffed services and there are political pressures to confine these services to "plain vanilla" services rather than specialized products designed to compete actively with third-party retailers. No state has yet to adopt a plan that would somehow involuntarily re-assign customers to competitive retailers at the outset of restructuring. Instead, the local utility is designated as the "default provider." That is, if a customer does not make an explicit choice to be served by another retailer, the local utility remains its retail supplier. This gives the incumbent utility the advantage of customer inertia in maintaining market share, but this "advantage" typically creates no profit opportunity because default service prices are generally set on a cost pass-through basis with no profit margin. This zero-profit structure serves no one's commercial interest – neither utility nor independent retailer. This arrangement is probably not stable in the long term. In several states, the long-run role of the local utility in default service has been explicitly reserved as an issue to be re-visited after several years of experience.

- **Metering and Billing**: It is difficult to generalize about metering and billing rules across states. Most states have opened billing to competition, but many states have been reluctant to open metering to competition, at least initially. Key questions are whether the local utility should be the default provider of metering and billing; if so, whether the utility should provide a cost-credit to retailers providing their own metering and billing; or whether metering and billing should simply be deregulated. Strategic developments in this area will likely take a few years to become clearer as regulatory rules develop further. Given the advantages of scale economies in these activities, it seems likely that the long-term victors will be large, information processing enterprises doing business on a regional or national scale.

- **Affiliate Rules**: Most states have adopted very strict rules designed to erect "fire walls" between monopoly functions (e.g., transmission, distribution, and default retailing) and new competitive ventures affiliated with the utility. For instance, in most states the utility is precluded from making referrals of customers preferentially to affiliated competitive businesses or from giving affiliates preferential access to competitively sensitive information of any kind. These rules substantially constrain the range of business strategies that utilities might find attractive in a less restrictive regulatory environment.

Taken together, state retail access policies are having substantial impacts on utility business strategies and corporate structures. In general, utilities are being encouraged or directed to place their competitive activities in separate subsidiaries and retain only their monopoly utility functions within the regulated utility. Specifically, they are being encouraged to divest some or all of their non-nuclear generation and place the remainder into "unregulated" subsidiaries. Likewise, to the extent they wish to offer competitive retailing services, they are being required to develop these businesses as strictly separate subsidiaries. As a matter of public policy, these mandated corporate structures appear in many instances to eliminate certain efficiencies of scale and scope. The implicit judgment by regulators appears to be that this potential loss of static efficiencies is

more than offset by the resulting dynamic efficiencies of increased competition, or simply by the possible populist benefits of reducing the utilities' political-economic power or building a constituent base of competitive enterprises beholden to regulators for their existence and economic protection.

2.5 The Technological Foundations of Restructuring

In the causal chain driving institutional change, current technological boundaries form the basis of relative economic scarcity and, therefore, resulting market prices. These prices, in turn, direct incremental technological innovations toward breakthroughs having the greatest economic payoffs. Meanwhile, social institutions tend to evolve to support the social organization of production most compatible with the most economical production technologies. Thus, technological change and its associated economies are key drivers of institutional change.

Ironically, the current retail restructuring of electricity markets is not being driven primarily by technological changes internal to the power industry itself, but rather by changes external to it, especially information processing and communication technologies. Many observers like to point to the recent progress in gas turbine development that has dramatically improved thermal efficiencies and reduced optimal scale. Many even predict that large central-station generation will soon be a thing of the past. Those changes undoubtedly fanned the fires of wholesale competition by creating favorable economics for cogeneration, on-site self-generation, and small scale EWGs. They also ultimately fanned the fires of retail competition by creating incremental generation economies that were considerably below the embedded cost of generation for utilities in many states (although falling gas prices would have been sufficient by themselves). This created a strong constituency for attempting to bypass the sunk costs embedded in utilities' generation portfolios. But it is important to recognize that these forces would not have found effect without the enabling technologies of the information revolution. Only in the 1990s did it become realistic to implement the huge information exchanges necessary to coordinate the system in the absence of vertical integration, conduct the necessary myriad market transactions, and figure out who owed what to whom when the day was done. Without the information processing revolution, widespread retail access would be impossible.

As we move forward, further technological changes loom on the horizon. Advancements will continue to occur in information and communications systems creating intelligent real-time load management and other services for end users. This will complement the current structures implementing retail access. However, advancements in small-scale distributed generation can also be expected. While such advancements should be welcomed, their impact on current and evolving institutions are difficult to predict. One impact may be to stifle investment in additional high-voltage transmission and thereby hasten the demise of central station power by means of a self-fulfilling prophecy.

3.0 Recent Business Strategies In Response To Structural Change

The U.S. power industry is huge and diverse. The remainder of this chapter attempts to summarize the major changes taking place. The main emphasis is focused on the business strategies being pursued by traditional IOUs and the major independent power players. At this point, the broad dimensions of restructuring are reasonably clear. The once vertically integrated columnar structure of the industry is being restructured into three horizontal strata of yet determined geographic scope. The top and bottom strata, generation and retailing, are being functionally or structurally separated from the middle two natural monopoly strata, transmission and local distribution. Prices in the competitive segment are being "deregulated" and open access to monopoly elements is being mandated at regulated prices, terms and conditions. Traditional IOUs are "repositioning" their assets by attempting to transfer their valuable assets from regulated to non-regulated activities, with the consent of regulators and other stakeholders, while also attempting to develop valuable competitive expertise in emerging new service markets. It is unlikely these incumbent IOUs will be able to succeed on a competitive basis in all the areas they traditionally pursued as protected monopolists. For those who choose wisely, there will be many opportunities to capture value. The strategic trends reviewed below include: the explosion of competitive wholesale marketing, the consolidation of IOUs through mergers and acquisitions, the huge divestitures and repurchasing of generation by IOUs, the emergence of retail energy services, the diversification of IOUs into telecommunications, the possible evolution of independent transmission companies, and the branching out of all players into foreign investments.

3.1 Wholesale Power Marketing

Wholesale power marketers are simply entities who own power and sell it for resale under market-based price regulation. They acquire ownership over power by either producing it themselves or acquiring title from another party. Power marketers fall under the pricing jurisdiction of the FERC. FERC has granted market-based pricing to well over 500 marketers including 337 entities that are entirely independent of IOUs, 123 entities affiliated with traditional IOUs, and 73 IOUs.[4] In creating EWGs, EPAct specifically provided that they be allowed to buy and sell power at wholesale. Thus, EPAct created a potentially huge number of additional power marketers. Later, FERC further broadened the field by ruling that contracts, books and records were not "facilities" under the meaning of PUHCA.[5] As a result, a power marketer acting as a pure middleman does not fall under the restrictions of PUHCA and, therefore, need not apply for exemption as an EWG. More importantly, since not required to apply for status as an EWG, these pure middlemen are not governed by the prohibition against retail sales applicable to EWGs and can, therefore, make sales in both wholesale and retail markets.

[4] "Staff Report to the Federal Energy Regulatory Commission on the Causes of Wholesale Electric Pricing Abnormalities in the Midwest During June 1998," September 22, 1998.

[5] Louis Dreyfus Electric Power Inc., 62 FERC 61,524 (1993).

The volume of sales by power marketers is probably the best single index of the growth of competitive wholesale electricity markets in the U.S. This growth has been nothing less than dramatic since the beginning of 1995. In the first quarter of 1995, there were only eight active marketers and their total sales were only 1.8 million Mwhs. By the third quarter of 1998, there were 120 active wholesale power marketers making sales totaling 850 million Mwhs.

Table 1 shows the top ten marketers during the third quarter of 1998. Although these statistics are national and fail to indicate anything about concentration in regional markets, they suggest very active, competitive markets. Together the top ten marketers account for a bit less than two-thirds of all sales. Moreover, this percentage has declined from almost three-quarters in 1996. While Enron is the clear leader and likely to remain so for some time, its relative market share has steadily slipped as new players have developed. (For instance, Enron's market share was 35.7% in the first quarter of 1996).

Table 1
Top Ten Wholesale Power Marketers

	MWHs	Market Shares
Enron Power Marketing	161.2	19.3
Southern Co. Energy Marketing*	66.3	7.9
Electric Clearing House	51.4	6.2
Aquila Energy (UtiliCorp)*	43.7	5.2
LG&E Energy Marketing*	41.7	5.0
Entergy Power Marketing *	38.2	4.6
Duke Energy Trading and Marketing*	31.7	3.8
PG&E Energy Trading*	30.4	3.7
Statoil Energy Trading	29.6	3.5
PacifiCorp Power Marketing*	27.4	3.3
All Others	328.4	37.5
Total	**850.0**	**100.0**

* Affiliates of traditional utilities.

Source: Edison Electric Institute, Edison Times, December 1998.

It is impossible to associate the phenomenal growth of wholesale power marketing with a particular business strategy. Instead, it is the manifestation of several strategies. Traditionally, utilities would use wholesale power markets on an opportunistic basis to sell power from the portion of their facilities not being immediately used to serve their retail franchise customers, or to buy power from other utilities when it was cheaper than generating the power from their own facilities. Virtually all utilities engaged in these activities, but the efficiency of these markets was inhibited by the uncertain availability of transmission. Moreover, the urgency of consummating transactions was reduced by the fact that most utilities controlled sufficient physical facilities to meet their retail customers' power needs and retail customers were "captive" and had to pay the utilities' power procurement costs regardless of their levels.

In the newly restructured industry, new factors are driving the increased activity in power markets. New independent generators rely on power marketing expertise to maximize the value of their assets. Likewise, even traditional utilities are under increased pressure to increase the performance and utilization of their generation and transmission assets. Furthermore, as retail

direct access proceeds, many utilities have come under pressure to divest a portion of their generation assets. This has left them in a situation in which they no longer own generation adequate to serve the demands of those retail customers who have not yet chosen alternative suppliers. They now have an urgent need for power marketer services to help them handle these suddenly exposed market risks. Likewise, newly emerging retailers have similar needs for the risk management services of power marketers. Moreover, retail access has also exposed the previously unsatisfied demands of customers for customized energy-related services.

In general, three different approaches have emerged in the power marketing business: the generation, retail, and intermediary strategies. The generation approach is the most traditional and focuses on selling generation output into the highest value markets. The retail approach focuses on working closely with end-users to identify needs and then going into the power market to satisfy these needs. The intermediary approach aggregates power from various sources, separates these portfolios into individual risk components, and then repackages these components into various physical and financial products to meet both individual customer and retailer needs.

Along with the new demands for power marketing services are also new abilities to satisfy them due largely to open wholesale transmission access. Wholesale trading hubs and marketing centers are beginning to emerge for electricity similar to those in the gas industry. These hubs provide for price discovery for standard products traded at physical transfer points. This fosters the development of market liquidity. When the trade press began publishing wholesale power prices in 1994, prices were available for only seven locations. Published prices are now available for approximately 24 locations. Futures trading in electricity began at the New York Mercantile Exchange (NYMEX) in 1997. NYMEX now has trading in four futures contracts – two in the Western Interconnection and two in the Eastern Interconnection. NYMEX reported that in 1998 more than 80 million futures contracts were traded, an increase of nearly 10 million over 1997. Options trading also increased to more than 15 million in 1998, an increase of nearly 2 million over 1997.[6] The Chicago Board of Trade (CBOT) offers trading in two contracts – one at ComEd and another at TVA. The Minneapolis Grain Exchange offers a contract for delivery at Minneapolis. Furthermore, both NYMEX and CBOT are pursuing the expansion of futures trading to additional delivery points.[7] As the geographic scope of markets expands and trading becomes more regular and liquid, new option and hedging contracts will emerge to assist market players in managing risks. Especially due to the importance of gas as a boiler fuel in powerplants operating at the price-setting margin during most hours of the day, electricity markets and gas markets are converging. Transmission of electricity has become a substitute for transporting gas, and vice versa. Considerable locational and temporal arbitrage opportunities will continue to develop. This is already in evidence in the list of top ten marketers in Table 1. Most have considerable gas interests and expertise.

[6] James R. Kukart, "Utility Stocks in the Spotlight," Utility Business, April 1999, p. 54.

[7] "Staff Report to the Federal Energy Regulatory Commission on the Causes of Wholesale Electric Pricing Abnormalities in the Midwest during June 1998," September 22, 1998.

Traditional utilities all have internal power marketing functions and many will be tempted to expand these functions as a business strategy. Therefore, the field is likely to remain crowded with low profit margins. But even in the long term, most observers expect wholesale power marketing will remain a high-volume, low-margin, risky business. Episodes like the 1998 midwest price spike will lead periodically to sober reassessments of business strategies such as the total withdrawal from the futures market of major players like LG&E who recently left the speculative side of the power trading business to focus on the development of their physical generation portfolio.

3.2 Utility Mergers and Acquisitions

One of the most visible manifestations of corporate strategies in response to electricity market restructuring is the large number of utility mergers. Table 2 shows a list of the largest of these mergers. Although merger activity increased from historical levels even in the years immediately preceding EPAct, it accelerated enormously in subsequent years.

In reviewing utility merger activity, it is important to keep in mind that the market for corporate control of utilities in the U.S. is unusually constrained by PUHCA. There may well be many potential suitors for utilities who have no desire to become PUHCA-registered holding companies. Therefore, until PUHCA is either substantially amended or repealed, eligible suitors appear to be severely limited to neighboring utilities or foreign buyers.

The potential explanations for utility mergers are diverse. Public announcements generally emphasize two rationale: achieving efficiency savings through combined operations, and creating a larger and more diverse organization better able to survive competitively. Less- public explanations might include an expectation of increasing the ability to exercise market power as well as simple satisfaction of management egos. In truth, it is not so obvious that simple horizontal mergers of contiguous electric utilities will produce strategic benefits. The publicly claimed cost efficiency improvements are usually no more than 2-3% of revenue (and unverifiable in any event). Moreover, in view of open transmission access, it is questionable whether the merged entities would have any greater ability to exercise market power. The FERC is likely to order the merged entity to join an RTO, thereby virtually eliminating its ability to exercise greater vertical market power through control of transmission access. The FERC will also scrutinize any increase in horizontal market power and may order some amount of generation divestiture as a precondition of merger approval.

Setting aside satisfaction of management egos, this leaves the increased ability to survive competitively as the best motivation for mergers. Such a rationale must be based on increased economies of scale and scope. No doubt many of the almost 200 IOUs in the U.S. are too small to achieve sufficient scale economies to survive in a competitive market and many of the mergers may be warranted on this basis. However, in the new market there will be many niches and becoming a giant may not be the best survival strategy for many of these niches. In energy trading, for instance, profits depend on speed of response. Mega-mergers may simply create large bureaucracies unable to respond profitably in such a fast-paced environment. To the extent that mergers are a substitute for a more imaginative competitive strategy, they may prove worse than doing nothing at all.

In addition to horizontal mergers which may or may not achieve significant scale economies, the list in Table 2 also contains many mergers apparently based on achieving increased economies of scope – especially so-called "convergence" mergers between electricity and gas companies. One rationale for these mega-mergers is to form a full-service energy company capable of supplying integrated energy solutions to medium and large customers. A separate but complementary motive is simply to capture efficiencies in the wholesale gas and power markets. Most observers believe that nearly all new large powerplants built in the next few decades will be gas-fired. Moreover, combining gas and electric businesses provides electric companies with a strategic hedge on the unknown future of distributed generation and its possible impact on the economic viability of the electric grid. Thus, the competitive futures of large scale combined-cycle plants as well as small scale gas-fired fuel cells, cogeneration, microturbines, and aeroderivative turbine technologies are all speculations driving interest in convergence mergers. These convergence mergers are clearly evident in Table 2. Among the most notable are:

- Gas giant Enron's acquisition of Portland General Electric;
- Duke Energy's purchases of PanEnergy and UP Fuels;
- Texas Utilities acquisition of Enserch;
- LILCO's acquisition of Brooklyn Union Gas;
- Dominion Resources play for Consolidated Natural Gas;
- Carolina Power and Light's move to acquire North Carolina Natural Gas; and
- Northeast Utilities purchase of Yankee Energy System.

Still more convergence mergers between electric and gas utilities are expected in the future.

Table 2
Selected Major Utility Mergers and Acquisitions in the Last 10 Years

Partners	New Name	Completion
Pacific Power & Light Utah Power & Light	PacifCorp	1989
Midwest Energy Iowa Resources	Midwest Resources	1990
IE Industries Iowa Southern Utilities	IES Industries	1991
UtilitCorp United Centel Corp.	WestPlains Energy	1991
Indiana Michigan Power Michigan Power		1992
Iowa Power Iowa Public Service	Midwest Power System	1992
Kansas Power & Light Kansas Gas & Electric	Western Resources	1992
Northeast Utilities Public Service of New Hampshire		1992
Entergy Gulf States Utilities	Entergy	1993
Iowa Electric Light & Power Iowa Southern Utilities		1993
Texas Utilities Southwestern Electric Service	Texas Utilities	1993
PSI Resources Cincinnati Gas & Electric	CINergy	1994
Midwest Resources Iowa-Illinois Gas & Electric	MidAmerican Energy	1995
Duke Power PanEnergy	Duke Energy	1997
Enron Portland General	Enron Portland General Electric	1997
Houston Industries NorAm Energy	Houston Industries (Renamed Reliant)	1997
Ohio Edison Centerior Energy	FirstEnergy	1997
Texas Utilities Enserch	Texas Utilities	1997
Public Service of Colorado Southwestern Public Service	New Century Energies	1997
Puget Sound Power & Light Washington Energy		1997
Southern Company Vastor Resources	Southern Company	1997
Union Electric CIPSCO	Ameren	1997
LG&E Energy KU Energy	LG&E Energy	1998
Delmarva Power & Light Atlantic Energy	Conectiv	1998
Long Island Lighting Brooklyn Union Gas	KeySpan Energy	1998
WPL Holdings IES Industries Interstate Power Co.	Alliant	1998
Enova Pacific Enterprises	Sempra Energy	1998

CalEnergy MidAmerican Energy	MidAmerican Energy Holdings Company	1999
Duke Energy UP Fuels	Duke Energy	1999
Dominion Resources Consolidated Natural Gas	Dominion Resources	Pending
El Paso Energy Sonat		Pending
Energy East (NYSEG) Connecticut Energy		Pending
Northern States Power (NSP) New Century Energies		Pending
National Grid Group New England Electric (NEES)		Pending
New England Electric (NEES) Eastern Utilities Associates (EUA)		Pending
SCANA Public Service of North Carolina	SCANA	Pending
AES Cilcorp	NSTAR	Pending
Boston Edison Company (BEC) Commonwealth Energy	BEC Energy	Pending
Consolidated Edison Orange and Rockland	Consolidated Edison	Pending
Sierra Pacific Resources Nevada Power	Sierra Pacific Resources	Pending
Scottish Power Pacificorp		Pending
Allegheny Power Systems DQE	Allegheny Energy	Pending
American Electric Power Central and South West	American Electric Power	Pending
Western Resources Kansas City Power & Light	Westar Energy	Pending
Carolina Power & Light North Carolina Natural Gas		Pending
Dynegy Illinova	Dynegy	Pending
New York State Electric & Gas Central Maine Power		Pending
Northeast Utilities Yankee Energy System		Pending
Indiana Energy Southern Indiana Gas & Electric (SIGCORP)		Pending

* Source: Edison Electric Institute, Electric Utility Restructuring Activity and Utility Merger Status Update.

One final phenomenon worth pointing out is that major acquisitions of traditional electric utilities have not been limited to purchases by other U.S. utilities and foreign companies (as discussed later). As also shown in Table 2, two large developers of powerplants, CalEnergy and AES, have each acquired major utilities – MidAmerican and Cilcorp (pending) – paying $2.42 billion and $885 million respectively. Another large generation developer, Dynegy, has recently announced its plan to acquire Illinova. Independent marketer Enron's much publicized purchase of Portland General Electric is also worth noting.

3.3 Sales and Purchases of Existing Generation

U.S. electric utilities are in the process of divesting substantial portions of their traditional generation portfolios. For the most part, this is being done "voluntarily" in exchange for FERC approval of market-based pricing authority or mergers, or as part of a state-approved retail access package that provides the utility with recovery of its stranded costs. Moreover, some utilities may simply find it profitable to sell their generation at the attractive prices being offered (although most, if not all, of this surplus is generally being credited to ratepayers). Only the states of Maine and Texas have directly ordered utilities to divest generation.

Table 3 shows the amounts of generation being offered and sold in these restructuring-related divestitures. The total realignment of generation portfolios is dramatic. Almost 100,000 MWs of capacity has been offered for sale, with about 60,000 MWs already sold. Table 4 shows the top dozen purchasers of this divested generation. Buyers and sellers seem to fall into several categories. First, some utilities clearly have business strategies to remain players in the U.S. generation market (e.g., Edison Mission Energy and PG&E's U.S. Generating). Even though their parent utilities are divesting generation, their generation affiliates are buying large amounts of generation elsewhere. Second, some utilities may be exiting generation altogether with no intention of returning (e.g., NEES, Montana Power). Third, some purchasers are independent generators simply expanding their generation holdings (e.g., Sithe, AES). Fourth, several buyers are utilities in the Southeast where state PUCs have generally shown little inclination to adopt retail access (e.g., Duke, Southern, FPL). These utilities may harbor hopes of remaining vertically integrated at home while owning competitive generation in other utilities' service territories. Alternatively, they may believe that adoption of direct access in their states will eventually compel them to divest portions of their local generation so they need to buy generation in other states now when it is for sale or risk losing their share of the national generation market.

Table 3 also shows many nuclear plants are for sale. Over the past year, there has been considerable discussion and speculation regarding consolidation of the nuclear industry. AmerGen, a partnership of PECO and British Energy purchased GPU's Three Mile Island I station. Entergy recently entered into an agreement to purchase Pilgrim from Boston Edison. AmerGen has shown serious interest in purchasing the Vermont Yankee plant. In time, many industry analysts believe that nuclear plant ownership will be concentrated in a small number of operating companies.

Table 3

Restructuring-Related Generation Divestiture (MWs Sold and Offered)

Company	Fossil and Hydro (MWs)	Nuclear and Power Contracts (MWs)
Bangor Hydro	166	282
BEC Energy	1,983	670
Central Hudson	972	
Central and South West	550	
CMP Group	1,233	574
Con Ed	6,293	
Commonwealth Energy	984	675
DQE	3,311	
Edison International	9,562	
Energy East	2,366	210
EUA	543	522
GPU	5,346	1,522
Green Mountain Power	118	
KeySpan		206
Maine Public Service	92	18
Montana Power	1,556	104
NEES	3,960	1,100
Nevada Power	1,964	
Niagara Mohawk	3,917	1,080
Northeast Utilities	3,772	435
Orange & Rockland	962	
PacifiCorp	1,042	
PEPCO	6,120	680
PP&L Resources	425	
PG&E Corp.	10,924	
Portland General	2,485	
Puget Sound Energy	735	
Sempra Energy	1,976	800
Sierra Pacific	1,085	
UGI	70	
UniCom	11,570	
Unisource	1,992	
United Illuminating	1,133	129
Unitil	24	267
Vermont Yankee		540
Total	**88,819**	**9,814**

Source: Edison Electric Institute, Divestiture Action and Analysis, April 1999.

Table 4

Leading Purchasers of Recently Divested Utility Generation

Company	Capacity (MWs)
1. Edison Mission Energy*	11,656
2. Southern Energy*	6,595
3. Sithe Energies	6,100
4. AES	5,380
5. NRG Energy*	4,938
6. U.S. Generating*	3,960
7. Reliant*	3,776
8. Duke Energy*	2,745
9. PPL Global*	2,710
10. Orion Holdings	2,516
11. FPL Group*	2,425
12. KeySpan Energy*	2,168
All Others	4,698
	59,667

* Affiliates of traditional utilities

Source: Edison Electric Institute, Divestiture Action and Analysis, April 1999.

Utilities are accustomed to owning and operating generation. Many undoubtedly believe that they are reasonably competent in doing so and will pursue a strategy to remain in this business. But it is rapidly becoming a far different business than they are used to. The new game has no "captive" retail customers to absorb the risks of inefficient generator operations. Instead, the new generation business is one of efficiently managing an asset in a competitive wholesale market. It will necessarily involve not only traditional physical operational competencies but also new power marketing expertise or alliances. Key strategies for success will include risk sharing with fuel providers, redesigning operation and maintenance practices, a much more disciplined approach to incremental capital additions, and building a portfolio of regional generating assets to capture economies of operations and integrated bidding. It seems reasonable to expect that the core of survivors will be considerably smaller than the number of past utility incumbents and that the U.S. generation market will become more concentrated.

3.4 New Merchant Powerplants

Regardless of the further spread of retail access, it is doubtful that any new generation plant will ever again be constructed under the traditional cost-of-service framework. Instead, the market will be relied upon to bring forth adequate new generation. There are clear signs that the market is responding enthusiastically to this challenge. In its March 1999 survey of the electric utility industry, Goldman Sachs compiled an extensive (though not necessarily comprehensive) list of new merchant generation facilities planned or under construction in the U.S. The list totals

85,030 MWs, with more than 30,000 MW in the northeast, roughly 10,000 MW each in the southeast, midwest, and southwest, and over 20,000 MW in the far west.

The list of companies in all areas is extremely diverse. U.S. Generating (PG&E) is a big player in the northeast with plans for over 9,000 MW, almost one-third of the new planned additions. Sithe is the largest of the independents in the northeast in terms of planned additions with 4,300 MW. In California, the California Energy Commission lists 20 projects totaling 13,464 MWs as current, expected or approved licensing cases. These projects are spread among 13 separate developers. Calpine is the largest with 2,380 MWs. U.S. Generating is second largest with 2,098 MW. Duke is third with 1,736 MWs.

3.5 Energy Services Retailing

As each successive state adopts retail access, its native utilities have had to decide their retailing strategies. The result has been a cultural shock for utility management. Each utility has been engaged for years in "marketing" energy services to captive customers. Most believe they have some amount of retailing experience and expertise, and certainly all have a large number of retailing employees with a vested interest in pursuing a retailing strategy. Moreover, years of thinking like vertically integrated monopolies tends to make management inclined erroneously to regard the financial security of all their upstream investments as being critically dependent on their retaining a base of retail customers. In short, every traditional utility has a knee-jerk corporate reflex to want to retain as many of its current retail customers as possible and the more aggressive utilities want to pursue a regional or national retailing business.

But a more sober strategic assessment usually arises to challenge this conventional reflex. First, a large part of the retailing business is a pure commodity business with the primary services being the provision of various risk hedges especially to large customers. While this business is familiar to wholesale power marketers, it is almost totally foreign to the traditional utility's retailing employees. Moreover, it is a risky, low-margin business likely to draw a good deal of concern from the utility's chief financial officer. Second, being a successful retailer to large customers with nationwide accounts may require a national, or at least broad regional, retailing operation. It may not be possible to operate a smaller regional retailing operation and expect to be successful with large customers. Third, it is not at all obvious that successful retailing is required in order to be successful at any other upstream production and delivery activity. Fourth, all states adopting retail access have also adopted very strict retailing affiliate rules designed to neutralize the incumbent advantages of the utility and its affiliates in retailing. In general, utilities are prohibited from offering anything but the simplest of tariffs to customers. More attractive "competitive" products can be offered only through a retailing affiliate and the utility is prohibited from preferentially referring its customers to its affiliate or giving its affiliate preferential access to any customer information.

Thus far in the U.S., development of competitive retailing in those states adopting retail access has been slow to develop, especially for smaller customers. This is primarily due to the narrow retail margins available to competitors due to the manner in which restructuring is being implemented. For instance, in Massachusetts and Rhode Island, during the first seven years following retail access, customers have a choice of buying their power from a competitive retailer (including utility affiliates) or purchasing it from a utility under a "standard offer." The problem for competitive retailers is that, as part of a complex deal to allow utilities to recover stranded

costs while encouraging them to divest their generation, the pricing in these standard offers was set below prevailing wholesale prices during the first several years of transition. The result is negative retail margins for utilities and an almost impossible market environment for competitive retailers.

The market environment is more favorable but still very challenging for competitive retailers in California. During an initial four-year transition, all customers' rates are frozen. All customers have the option of continuing to purchase power from their local utility. The utility is obligated to purchase all such power from the official spot-market Power Exchange (PX) and pass it along to customers at cost without any extra profit mark-up. Customers purchasing power from competitive retailers pay the frozen price minus these cost-based energy charges. Thus, to be attractive on a purely commodity basis, a retailer must offer to sell retail power below the PX wholesale power cost. Needless to say, this makes it difficult for competitive retailers to win market share. Moreover, the retail price freeze essentially offers all customers a hedge against spot-market volatility. Once the four-year transition ends, this volatility in the utilities' basic service product will be uncovered and presumably competitive retailers can be considerably more successful by offering customers retail price hedging services. Despite these transition conditions and the much-publicized temporary withdrawal of Enron from the small consumer market in California, the California market is nonetheless very active. Companies marketing to residential and small commercial customers in California must register with the State. There are 32 registered retailers. Ten of these retailers are affiliates of traditional utilities including regional utilities such as Arizona Public Service and Salt River Project as well as large national players such as Duke, Southern, New England Electric, and Green Mountain Power. After the first 11 months of market operation, 13.5% of all California IOU loads were being served by competitive retailers.

To date the market in Pennsylvania is the most amenable to competitive retailers. Unlike Massachusetts, Rhode Island, and California, when a customer in Pennsylvania purchases power from a competitive retailer, the customer receives a reduction in its utility bill that exceeds the wholesale price of electricity by a considerable margin. This is essentially achieved by making a portion of the utilities' stranded cost avoidable by customers switching to competitive retailers. This creates the possibility of a profit margin for competitive retailers. But this pricing mechanism cannot be sustained in the long run, and it is not clear at this time what sustainable mechanism will be introduced to succeed it.

Successful retail business strategies generally involve one or more of the following: (1) branding, (2) financial hedges, (3) related energy services, (4) "green" power marketing, and (5) metering and billing services. Efforts at branding are immediately apparent in Table 2. Utilities with distinctive regional names such as Public Service of Indiana, Kentucky Utilities, Louisville Gas and Electric, San Diego Gas and Electric, Middle South Utilities, and Houston Power and Light became PSI, KU Energy, LG&E Energy, Enova, Entergy, and Reliant. Mergers have created the opportunity to introduce still more new names such as Western Resources, Cinergy, FirstEnergy, Ameren, Conectiv, New Century Energies, Alliant, and Sempra.

But jettisoning a well-regarded regional name in pursuit of a national brand can be a double-edged sword. Incumbent energy providers have proven to have stronger brand equity than many critics believed. Most residential customers will remain with their current provider assuming the name stays approximately the same and prices remain roughly stead. This fact has caused some attempts at obscure national branding to be retracted in favor of names more recognizable at home while toning down their traditional regionalism. Thus, Pacific Gas and Electric initially created Vantus as its retailer but not too long later renamed it PG&E Energy Services. Similarly, Public Service Electric and Gas launched Energis before renaming it PSE&G Energy Technologies. Southern California Edison became the obscure SCECorp before renaming itself Edison International – a name with national and international meaning as well as specific local recognition. A few other utilities such as Southern and Green Mountain Power are fortunate to have names that just seem to play well nationally while also retaining long-established local brand loyalties.

Companies have spent large amounts of money to establish brand names. For instance, Enron spent $75 million in 1998 to establish its brand nationally. In one of the most well publicized failures, UtiliCorp United spent $20 million launching its EnergyOne in 1995. EnergyOne was to combine the services of UtiliCorp and PECO Energy with AT&T and electric security giant ADT Security Services.[8] In 1998, UtiliCorp shut down this multi-utility franchise branding program with no other utilities having signed up to use the EnergyOne brand. Most potential franchisees had been working diligently to strengthen their own brand identity and viewed the prospective use of EnergyOne as a dilution of their identity.

Retailing to large customers generally involves some mixture of providing commodity hedges along with diverse energy services. Hedging by itself is best viewed as essentially a power marketing activity. Risks are high and margins are slim. But provision of energy services is a far different business. Energy service companies (ESCOs) provide a wide range of services including energy-efficient design services, computerized energy use modeling, equipment acquisition and installation, performance contracting, shared-savings programs, energy monitoring, facilities management, etc. ESCOs frequently specialize in developing, installing, and financing comprehensive, performance-based projects, typically 5-10 years in duration, aimed at improving the energy efficiency or load duration of customer facilities. Projects tend to be performance-based with the ESCO's compensation tied to the amount of energy actually saved. About 30-40 major ESCOs are currently active in the U.S. A few large super-ESCOs (such as Duke Solutions, Edison Source, Enron Energy Services, PG&E Energy Services, and Xenergy) account for most of the revenues.

A final important retailing niche is the provision of "green power." A significant minority of customers appears willing to pay a premium for renewable power. A few marketers are successfully pursuing this market. In California, this market is supplemented by a 1.5¢ per kwh credit to green retailers. Table 5 shows the green power retailers in California and

[8] Alan Brew and Lew Phelps, "Has Branding Failed the Utility Industry?", Electricity Journal, November 1998, pp. 23-29.

Pennsylvania who have been certified by the independent Green-e program sponsored by the Center for Resource Solutions located in San Francisco. Among these, it is worth noting that APX (Automated Power Exchange) conducts a spot market in green power commerce in California.

Table 5
Green Power Retailers and Products

California		
Commonwealth Energy	-	GreenSmart
New West Energy*	-	Green Value
Edison Source*	-	Earth Source
Green Mountain*	-	Wind for the Future
	-	EarthCare
	-	Renewables Electricity
Keystone Energy	-	Earth Choice
PG&E Energy Services*	-	Clean Choice
APX	-	Green Power Market
PacifiCorp*	-	Green Power
Foresight Energy	-	Ecopower
Enron	-	Earthsmart
Pennsylvania		
Conectiv*	-	Nature's Power
Green Mountain*	-	Nature's Choice
	-	Enviro Blend

* Utility Affiliates

Sources: Center for Resource Solutions website.

Another important retail strategic dimension involves metering and billing services. In most states adopting retail access, competitive retailers have a choice of billing customers directly or having the utility bill customers on their behalf. In a few states, such as California, the competitive retailer can also elect to collect the bill on behalf of the local utility distribution company, thereby depriving the local utility of any billing contact with the customer. Many states, at least for the time being, have chosen to leave metering as an exclusive function of the local utility. A few states allow competitive retailers to own, maintain, and read meters. Competition in metering and billing is a potentially significant market that is only beginning to take shape. The future of this market will depend a great deal on precisely what regulations govern it, especially the pricing of these services on customer bills and the ability of customers to avoid these charges by purchasing their metering and billing services from another provider.

3.6 Diversification Into Telecommunications

During the 1980s, several U.S. utilities ventured far from their traditional expertise and attempted diversifications into such wide-ranging businesses as real estate, financial services, and even retail sporting goods and drug stores. For the most part, these diversifications proved to be miserable failures and engendered longlasting negative reactions from the U.S. financial community. Consequently, utility diversifications in the 1990s have generally involved closely related businesses with reasonably clear prospects for business complementarity. Among the most frequently pursued diversifications are those into various telecommunications businesses. Indeed, deregulation in both the telecommunications and electric power industries is causing numerous strategies to be launched that seem likely to produce greater convergence in these two mega-industries. The strategy is at least superficially plausible, but the new business is complex and the risks associated with certain business strategies may be quite high. Though some will probably succeed, there may also be many failures.

For years, U.S. electric utilities have had ample legal authority to build telecommunication facilities to operate their electric utilities and most utilities already have extensive telecommunication facilities used to manage their electric systems. Even before the advent of retail access, electric utilities began recognizing that they could use broadband, switched telecommunications to retail customers to enable substantial efficiency gains in their utility systems. With the spread of retail access, far more voluminous flows of real-time information will be valuable to inform customers or their retailing agents as well as to drive end-use, load management software and smart meters. Without the widespread development of such two-way communication on the grid, much of the potential benefits of retail access will fail to be realized. Indeed, without such two-way communication, perceived real-time demands may be so price-inelastic that the resulting price volatility in energy spot markets may create a political backlash sufficient to slow down or arrest the spread of current retail access initiatives.

The Telecommunications Act of 1996 opens the door for electric utilities by lifting restrictions on the use of their existing telecom networks and enabling them to compete broadly in telecommunications businesses. As a result, utilities have begun leasing to telecom service providers the excess capacity (i.e., “dark fiber”) on their networks. Some electric utilities have even taken this a step further and have begun operating as telecom service providers themselves through partnerships, acquisitions, or unregulated subsidiaries. As summarized in Table 6, utilities are generally offering wholesale services, wireline services including voice and data, and they are also beginning to penetrate wireless services.

Table 6
Selected Ventures by Electric Companies Into Telecommunications

	Services		
Companies	Wholesale	Wireline	Wireless
American Electric Power (AEP)			x
Boston Edison		x	
Carolina Power and Light	x		
Central and Southwest	x	x	
Conectiv	x		x
Duke	x		
Edison International	x		
Enron	x		
Entergy	x		
KN Energy		x	
LG&E Energy		x	
Montana Power		x	
PacifiCorp		x	x
SCANA		x	x
Southern Company			x
Texas Utilities		x	x
Virginia Power (VEPCO)	x	x	

Source: McGraw-Hill, Electric Utility Week, 1996-1999.

The expansion of electric utilities into telecom is driven by their efforts to compete in changing electric power markets, consumer demand for bundled services, and simple attractiveness of growth opportunities in telecom. While annual growth in electric industry revenues is forecast to be around 2 percent, annual growth in telecom revenues are expected to be around 7 percent. In entering the telecom market, utilities are competing directly with incumbent telecom companies and numerous aspiring new entrants. This competition includes the regional Bell Operating Companies, interchange carriers, Internet service providers, cable television providers, competitive access providers, and competitive local exchange carriers. In this competition, electric utilities can expect to be disadvantaged by their general lack of expertise in telecom technologies and competitive retail marketing. However, they also enter the field with certain important advantages including an extensive customer base, usually a reputation for reliable high-quality service, ownership of valuable rights-of-way and telecom infrastructure, widespread name recognition and a functioning billing engine capable of rendering complex bills.

Electric utilities can generally take one of three courses in venturing further into the telecom industry: (1) form strategic partnerships with existing telecom companies, (2) acquire telecom companies, or (3) branch out on their own. The partnering strategy allows a utility to gain many of the strength that it lacks. For instance, Pacific Gas and Electric has partnered with Microsoft and cable giant TCI; TECO Energy with IBM; PSE&G with AT&T; UtiliCorp with Novell; KN Energy with Metricom; AEP with Sprint; Boston Edison with RCN; CP&L and Duke with Bell South; and PEPCO with RCN and Metricom.

There are also examples of purchases of telecom companies by electric utilities. AEP has recently purchased personal communication service (PCS) companies in Virginia and West

Virginia to provide improved energy information products and services to its electric customer. SCANA is acquiring major equity interests in companies such as InterCel providing PCS in the wireless communications market. Texas Utilities has acquired Lufkin-Conroe to provide a full range of local and long-distance telecom services. The Williams Company has formed a joint venture (WilTel) with Northern Telecom which offers a variety of data, multimedia, voice and video interconnect products. WilTel has, in turn, acquired Bell South's customer premise equipment sales and service operations in 29 states as well as two network system integrators, Comlink and SoftIron.

Several utilities are undertaking major internal expansions either individually or jointly with other energy utilities. Conectiv has transferred its fiber optic assets to a subsidiary and plans to provide local telephone and long distance services in Delaware, Maryland, southeastern Pennsylvania and southern New Jersey. Through DukeNet, Duke Power will provide PCS in the Charlotte area in partnership with BellSouth, CP&L, and 31 Carolina-based independent telephone companies. DukeNet is currently leasing its excess fiber to carriers and is building a fiber-coax hybrid network to eventually deliver Internet access, home security and automation services to homes. Enron owns a 55-mile fiber optic network surrounding the Portland area and plans to provide wholesale services and high-speed video, data, and multimedia services. In conjunction with Williams and Montana Power, Enron is building a 1,620 mile fiber-optic network from Portland to Los Angeles. Montana Power, through Touch America, provides interconnection services in all of Montana's major cities as well as long distance services in the northwestern U.S. PacifiCorp and KN Energy have teamed up to offer an integrated package of energy long distance telephone, cellular paging, Internet, and satellite television services under the Simple Choice brand. SCANA offers telecom services over its 900-mile fiber-optic network (Gulf States FiberNet) running through Alabama, Georgia, Mississippi, Louisiana, and Texas. Southern Company developed an extensive wireless network, called Southern LINC to respond to its customer's emergency needs. Southern is now offering a variety of wireless telecom services. Finally, Williams, through Vyvx offers broadcast-quality television and multimedia transmission services nationwide using its 17,000-mile fiber-optic and satellite systems.

3.7 Independent Transmission Companies

High-voltage transmission continues to be regulated by FERC (except in Texas). Retail access tends to expand FERC's authority to lower voltage wires. The precise delineation of this authority still needs to be clarified. At least for now, high-voltage transmission continues to be owned by the same incumbent utilities owning the local distribution facilities. This produces a patchwork of transmission ownership broadly corresponding to current utilities' local retail franchise areas. As the industry undergoes restructuring from vertical columns to horizontal layers, the question naturally arises as to whether these separate local transmission companies will be separated eventually from their traditional distribution affiliates and rebundled over broad geographic areas to form so-called "transcos" through mergers, acquisitions, or joint ventures.

Although it is appealing to draw direct analogies to interstate gas pipelines, certain difference must be acknowledged. Gas pipelines generally provide unidirectional flow from distant gas fields to city gates. By contrast, electric transmission lines integrate regional generation resources and customers in a fabric of multiple, redundant paths with constantly varying line flows. But the network interdependencies caused by parallel electric flows simply provides all the more reason for regional consolidation of electric grid control. This integration can be achieved either through ISOs or regional transcos, but there is a debate raging over which institutional form will or should ultimately prevail.

Utilities in states undergoing retail restructuring originally embraced ISOs as a means for shedding their vertical market power so that they could receive market-based pricing approval while also retaining a large portion of their generation. Ultimately, to placate regulators and facilitate recovery of their stranded costs, many of these utilities saw more wisdom in divesting larger amounts of their generation than originally contemplated. The FERC embraced ISOs as a superior way to eliminate vertical market power compared to the policing provisions of Orders 888 and 889. Therefore, as a condition for approving mergers, FERC began requiring participation in regional RTOs.

Integrating regional control over the grid through a not-for-profit ISO has certain advantages. It can be accomplished rather quickly over wide areas and accommodates participation by both IOUs and public power entities. Its degree of independence is more credible to a wide variety of stakeholders, and FERC seems more comfortable affording ISOs "light-handed" regulation and delegating to them an active market oversight role. Yet there are also potentially serious drawbacks to ISOs. They are no more independent than the composition of their governing boards, and the separation of transmission ownership from control raises serious concerns about incentives for efficient operations and investments.

The term "transco" is usually used to refer to an independent transmission company that also performs the customary functions of an ISO. In this sense, ISOs and transcos are mutually exclusive choices. But an independent broad regional transmission company could also exist underneath the control of an ISO. The term "gridco" is sometimes used to distinguish this situation. Sometimes it is suggested that an ISO might serve as an interim institution until a gridco of sufficient size is formed. Eventually, the gridco could assume the ISO's responsibilities and become a transco. But there are reasons to be skeptical of the political feasibility of such a path.

Proponents of integrating regional grid control under a transco emphasize the alignment of ownership and control, and the greater incentives for efficiency. Critics emphasize the difficulties of policing transco independence, structuring efficient operating and investment incentives, quickly achieving broad geographic scope, and attracting the participation of public power entities.

There are various entities which own extensive transmission systems in the U.S. These include large holding companies such as AEP, Southern and Entergy, as well as large federal entities such as Bonneville Power Administration, TVA, and WAPA. The UK's National Grid Group recently acquired NEES and EUA, both of which have divested most of their generation and retain largely wires assets only. In essence, the National Grid Company owns a gridco under the New England ISO. Elsewhere, certain IOUs are attempting to press the transco issue with

FERC. For instance, in April 1999, Entergy filed the general structure of a transco proposal with FERC and asked for an expedited declaratory order that its proposal met FERC's requirements for an RTO so that Entergy could attract additional regional participants in its transco as soon as possible. In June 1999, the Alliance transco applied for approval by FERC. Its members include AEP, CMS, Detroit Edison, FirstEnergy, and VEPCO. The Alliance transco would be larger than any of the previously approved ISOs. The Alliance transco is currently the primary test case for FERC approval of a transco.

Seemingly stripped of its strategic value to assist commercial affiliates, the business value of owning transmission becomes an open question. Price regulation by FERC will be key. To the extent that FERC imposes low rates of equity return and low depreciation rates on transmission investments, many will view transmission as a bad business. But sooner or later, FERC will have to adopt reasonable policies to encourage grid investments. Expert transmission companies with world-class skills in grid expansion, operation and investment will eventually find it attractive to consolidate ownership of the U.S. grid. To be successful, they will have to negotiate favorable regulation (presumably, performance-based), control costs, and correctly anticipate and accommodate the economics of distributed generation.

3.8 Foreign Investment in the U.S.

With a few notable exceptions, except for British companies, international firms have not been major investors in the U.S. market. National Power (UK) through its affiliate American National Power is by far the largest foreign player in the U.S. generation market with over 1,600 MW operating and over 5,000 MW planned or under construction. Tractabel (Belgium) has over 1,200 MW in operation and over 1,100 MW planned or in development. Several other foreign firms also have small positions in the U.S. generation market. Sithe Energies, a firm incorporated in the U.S. and generally regarded as a domestic firm even though it is controlled by Japanese and French investors, has one of the largest portfolios of independent generation projects in the U.S. totaling about 3,500 MW in operation with 4,300 MW more planned or under construction in the northeast.

UK companies are also pursuing acquisitions of traditional U.S. electric utilities. For instance, National Grid is purchasing New England Electric System and Scottish Power is acquiring PacifiCorp. Presumably these companies plan to apply the lessons they have learned in the UK to the evolving U.S. markets.

3.9 U.S. Investment Abroad

In recent years, U.S. companies have begun making extensive investments in electricity production and distribution facilities in foreign countries. Although some of this investment has come from traditional overseas investors like U.S. oil companies, most has come from traditional IOUs and unaffiliated U.S. generation developers. Several related forces are behind this sudden explosion of U.S. foreign investment. First, when EPAct amended PUHCA, it defined the legal concept of a "Foreign Utility Company" and exempted such enterprises from the general PUHCA requirement that facilities must be physically interconnected. Thereafter, U.S. companies investing overseas in electric facilities were freed from the administrative burden and uncertainty of having to seek a PUHCA exemption from the Security and Exchange Commission. The second important force was the growing privatization and liberalization of electricity markets

throughout the world. Without these changes, there would have been far fewer opportunities for U.S. foreign investment. The U.K., Norway, Argentina, Chile, New Zealand, the European Union, and Victoria, Australia have all adopted the principles of competition and open access. A third important force has been the general slowdown of the expansion of the U.S. electricity sector in the past 20 years compared to the growth prospects for electricity demand abroad. While U.S. demand growth has slowed below 2%, electricity demand in some foreign countries is forecast to grow at an annual rate of 7% in the next decade. At home, U.S. companies experience fierce competition with other U.S. firms to build the new generation necessary to satisfy the limited growth in the domestic market. While competition abroad is also active, bidding successes and larger margins may be easier to achieve.

The emerging international power business is dominated by companies from the U.S. and U.K. Large markets developed most quickly in Asia and Latin America, with markets in Eastern Europe and the Middle East developing later. The major U.S. companies that appear most committed to an international power business include CMS, Central and South West, Duke, Edison, Entergy, GPU, PSE&G, Reliant, NRG, Southern, Texas Utilities, AES, and Enron. U.S. companies appear to be following a variety of business strategies overseas. Some seem to be specializing in the acquisition and management of transmission and distribution infrastructure. Others seem to be specializing largely in the development of generation facilities. Still others seem to be interested in pursuing a mixed portfolio of distribution and generation, either separately or as integrated systems.

Risk management is one of the most important success factors in the international power business. There are plenty of risks to be managed including ordinary investment and fuel risks, but also political, sovereignty, contractual, and foreign exchange risks. Risk management favors enterprises of large size. It also favors joint projects including other international developers, fuel suppliers, and banks as well as local strategic partners. Another reason size and partnering are important is access to capital. Larger firms are generally able to use their superior access to capital markets to move more quickly and avoid project financing delays that may hamper smaller firms. To develop a generation portfolio in today's market requires an initial capital contribution of at least $500 million. It takes about $5 to $10 million to assemble a viable project proposal. This means that with a success rate of one-in-ten, it would take an outlay of about $500 million to develop a portfolio of ten successful projects. A few independents such as AES and CalEnergy have been able to build sufficient scale from meager beginnings. Other developers such as Edison Mission Energy have built scale slowly over the same timeframe, although with the assistance of a sizable parent. Finally, some newcomers have been able to acquire scale instantaneously through acquisition, such as Southern Company's purchase of established international generation developer CEPA.

To the extent U.S. companies are creating value through their international investments, they are either creating new assets through their deal-making skills or enhancing the value of existing assets. Owning and operating these facilities for their lifespan may not be their best strategy. Indeed, for some host countries, foreign financing of too large a portion of the domestic energy sector may cause balance of payment problems thereby necessitating greater sharing of energy project ownership with local investors in the long term. Also, in order to develop a project, sponsors often must assume greater equity than they would like to hold in the long term. Ideally, they would prefer to have smaller equity amounts in a larger number of projects, thereby

obtaining greater leverage from their capital. To obtain this balance, they frequently sell off a portion of their equity at a later stage of the project.

Thus, over the long term, U.S. companies will need to decide the balance they wish to achieve between entrepreneurial project development and long-term portfolio investment in operating energy facilities. These emerging global power companies will be active traders in these assets, buying and selling assets to take capital gains, raise capital for new project opportunities, and rebalance portfolios. They will maintain control over many of their assets, although not necessarily through majority ownership. They will use their deal-making skills, access to capital markets, and knowledge of local markets and politics as their main competitive advantages in acquiring both new and existing assets.

Several U.S. companies appear to be interested in the acquisition and management of transmission and distribution infrastructure. Distribution, in particular, offers opportunities for substantial profits in some host countries because this is where many of the inefficiencies are to be found. Also, by purchasing distribution companies in already open-access markets, U.S. companies hope to more quickly develop the corporate culture and expertise necessary to succeed in restructured markets at home. Over half the U.K. regional electricity companies, by value, are now owned by U.S. firms as are over three quarters of the distribution and supply companies in Victoria, Australia. For instance, in early 1997, giant AEP joined with Public Service Colorado in paying $2.44 billion to acquire Yorkshire Electricity, a U.K. regional electric company. In late 1998, AEP announced an agreement with Entergy to purchase CitiPower, an electric distribution and retail sales company serving part of Melbourne, Australia. In late 1995, Central and South West acquired the SEEBOARD regional electric company in the U.K. for $2.52 billion. Since 1996, CSW has also purchased multiple small distribution companies in Brazil. CSW is also developing generation resources in both Brazil and the U.K. GPU has been especially active in acquiring overseas transmission and distribution infrastructure. In 1996, GPU joined with Cinergy in paying $2.59 billion for Midlands Electricity, a U.K. regional electric company. In 1998, GPU paid $1.9 billion to acquire PowerNet, the transmission system of the state of Victoria, Australia. In 1999, GPU announced the purchase of Transmissions Pipelines Australia, a gas transmission company that it will rename GasNet. GPU has also been bidding on New Zealand distribution companies. In addition, GPU owns interests in nearly 7,000 MW of generation at 21 sites in eight countries overseas. In 1995, Texas Utilities (TXU) won a bid for $1.6 billion to purchase Eastern Energy, a power distributor carved out of the former State Electricity Commission of Victoria. In 1998, TXU expanded its distribution companies to the U.K. and the Czech Republic when it purchased The Energy Group, which owned Eastern Electricity, the largest of the U.K. regional electric companies. Eastern Generation also owns, operates, or has an interest in eight power stations in the U.K. making TXU a significant generation player as well. Reliant has purchased several distribution companies and integrated utilities in Brazil, Colombia, El Salvador, and Argentina. Finally, UtiliCorp United has followed a strategy of purchasing systems in English-speaking countries. In 1987, UtiliCorp acquired West Kootenay Power in Canada. Through a series of acquisitions beginning in 1993, UtiliCorp has assembled UnitedNetworks Limited, the largest wires operator in New Zealand. In 1995, a three-company consortium led by UtiliCorp purchased United Energy, serving parts of Melbourne, Australia, for $1.15 billion. In early 1999, UtiliCorp and an Australian partner acquired Multinet/Ikon, the largest gas distribution and retail company in Victoria, Australia.

On the other side of the strategic spectrum are U.S. companies that have largely avoided investing in transmission and distribution infrastructure, instead choosing to specialize in generation development and acquisition. Among the traditional utilities doing so are Dominion (VEPCO), Duke, Edison Mission Energy, and NRG (Northern States Power). All four companies were early domestic developers of independent power producers. Entergy has also joined the move toward international generation development after brief ventures into distribution companies. Dominion is a relatively smaller player internationally and owns generation mainly in Latin America. Duke likewise had developed projects mainly in Latin America. Edison Mission Energy is currently the largest owner of independent power projects worldwide with major holdings in the U.K., Australia, New Zealand, Indonesia, Spain, Thailand, and Italy. NRG is also a large player internationally, with major generation plants in Australia, Germany, Latin America, and the Czech Republic. In 1996, Entergy purchased CitiPower, a distribution company in Melbourne. In 1997, it purchased London Electric, a major U.K. regional electric company. Subsequently, Entergy sold both CitiPower and London Electric, and now specializes largely in generation in the U.K., Argentina, Pakistan, Peru, and Chile.

U.S. independents are also major generation developers abroad. The largest among these are AES, CalEnergy, Enron, and Dynegy. As discussed below, AES, CalEnergy, and Enron all have major investments in distribution companies as well. Only Dynegy continues to specialize overseas mainly in generation development. In 1996, Dynegy divested to AES its plants in Australia, the Netherlands, U.K., Canada and the Dominican Republic. In the future, Dynegy plans to concentrate its overseas efforts on Europe where it has major affiliated natural gas facilities. In June 1999, Dynegy and Illinova, a traditional U.S. utility, announced plans to merge thereby forming a $7.5 billion combined company.

Finally, many U.S. companies are pursuing both generation as well as separate distribution or integrated utilities overseas. Among the traditional utilities pursuing this course are CMS, Reliant, PacifCorp, PSE&G, and Southern. CMS was a relative latecomer to independent power development, but it has rapidly acquired both greenfield and privatized plants in Argentina, Australia, Brazil, India, Jamaica, Morocco, and the Philippines. In Argentina, Chile and the Philippines, CMS has developed and acquired clusters of assets including generation, distribution, transmission, and natural gas pipelines. Reliant owns major distribution facilities in Brazil and El Salvador as well as major generation plants in Colombia, Brazil and Argentina. In 1995, PacifiCorp acquired Powercor, an Australian power distributor, for $1.6 billion. In 1996, PacifiCorp was a partner in a consortium purchasing a major Australian powerplant. In 1998, PacifiCorp opened an office in Istanbul and is focusing on generation projects in Turkey, the Mideast and Eastern Europe. PSE&G is another relative latecomer to international development. PSE&G has distribution companies in Brazil, Argentina, and Chile, as well as major generation plants in Argentina, China, India and Venezuela.

Southern Company is also a latecomer, but a giant. In the U.S., Southern is a huge holding company with a system of 31,000 MW spread across five major operating companies in the southeast. In 1997, Southern purchased Consolidated Electric Power Asia (CEPA) the largest independent power producer in Asia, for $3.4 billion. In 1995, Southern made a successful hostile takeover of South Western Electric, a U.K. regional electric company. Southern now owns South Western Electric in partnership with PP&L. Southern has also purchased a significant share of CEMIG, a large integrated Brazilian utility, with over 5,000 MW of generation and has increased generation and gas pipeline investments in Chile. Southern also purchased a 26% share in BEWAG, a large integrated utility serving Berlin, Germany and having over 3,000 MW of generation. Southern has also purchased significant generation and distribution in Argentina, Chile, Trinidad, and the Bahamas.

Even though U.S. independents generally got their starts solely as developers of generation within the U.S., the major independents have all pursued distribution in addition to generation investments abroad. These large independents include AES, CalEnergy, and Enron. AES is the largest of the independents and a giant by any standard. AES has active generation projects in about 20 foreign countries. AES is also a partner in CEMIG, the large integrated Brazilian utility with over 5,000 MW of generation. It also participates in seven other distribution companies, all in Latin America. CalEnergy focuses on generation development in Europe, Indonesia, the Philippines, and Latin America. However, in 1996, it also succeeded in a hostile takeover of Northern Electric, a U.K. regional electric company. Enron is another huge independent operating internationally. In its overseas activities, Enron is mainly a developer of generation with projects in about 20 foreign countries. In 1998, Enron purchased a major distribution company in Sao Paulo Brazil, for $1.272 billion. Enron also owns interest in eight state gas distributors in Brazil.

4.0 Discussion

This chapter has addressed the rapidly evolving business strategies of U.S. electric companies in response to both the opening of wholesale and retail competition at home as well as the privatization of electric enterprises and liberalization of electricity markets abroad. Much of what is happening can only be adequately understood against the background of the dual federal-state regulatory framework in the U.S.. Although the federal government has done much to facilitate and encourage competition in wholesale markets, these markets are still technically regulated and likely to remain so for sometime further. Retail competition has been introduced in nearly half the states and for well over half the population. Although a federal Congressional mandate of retail competition seems possible, most observers do not believe it is imminent. Nonetheless, retail competition can be expected to spread steadily to the remaining states over the next decade.

Although retail competition has been adopted in 23 states, these restructurings are generally being phased-in over several years and markets are currently open in only a handful of states. While the changes in corporate structures and strategies have already been dramatic, further huge changes can be expected. Domestically, U.S. business strategies are heavily influenced by the emerging regulations governing restructuring. In the near term, corporate strategies have been understandably obsessed with the recovery of stranded generation costs. This has generally led to one of the most visible signs of corporate restructuring – the massive

divestiture of roughly 100,000 MW of generation in order to determine the market value of assets for stranded cost recovery purposes. For the most part, this generation has simply been purchased by other large U.S. utilities and placed in their "unregulated" subsidiaries.

Another highly visible hallmark of restructuring has been the large number of mergers and major acquisitions. In many cases, these mergers have been motivated by the general belief that, up to a point, bigger will be better in the new competitive world. Many mergers have been "convergence mergers" between electric and gas companies in accordance with the belief that unifying these two energy sources enables a company to offer customers preferred integrated energy services and also allows the company to better manage its electric generation fuel risks. Following passage of the Telecommunications Act of 1996, many electric utilities have also become aggressive in diversifying into various telecommunication businesses.

Ironically, the one competitive area that remains most unclear is retailing. Many companies are attempting to achieve national branding successes, but so far the evidence of success is mixed. In most regions, retail competition has been slow to develop and incumbent utilities still retain the bulk of smaller customers. In some states, retail customers are being subsidized to switch to new competitive retailers. But this policy cannot be sustained in the long run and it is not clear what public policy will supersede it.

It is also not at all clear what the future of the U.S. transmission grid will be. For the most part, the grid has been constructed historically through interconnections among autonomous local utilities. It seems almost certain that this structure is not a stable equilibrium in the new restructured environment and will evolve in the direction of consolidated ownership. However, it is not clear what institution will pursue consolidation. Presumably, consolidators will be independent standalone for-profit transmission companies. But development of such institutions will likely require greater financial encouragement from FERC.

One of the most dramatic trends in recent years has been the interest by U.S. utilities in investment abroad. Some U.S. players have been developing this business steadily over the last decade or longer (e.g., Edison Mission Energy, AES). Others have burst on the scene only recently with huge acquisitions of generation (e.g., Southern's purchase of CEPA) or distribution systems (e.g., acquisition of the UK and Australian regional electric companies). It remains to be seen how many of these ventures are truly value-creating and based on solid business expertise and how many are simply the latest example of ill-fated utility diversifications.

In conclusion, although many trends are taking shape, it is too early in the game to accurately predict the outcomes. But the stakes are high and the game should be fascinating for participants and spectators alike.